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SOUTHERN FOREST PEST REPORTER

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SUMMARY OF INSECT CONDITIONS IN 1956

During 1956 there was further progress in the control of the southern pine beetle in Southern Forest Experiment Station territory. No large concentrations of this species are known at present, although small spot infestations and scattered infested trees continue to appear in Mississippi and Alabama. There have been no indications of southern pine beetle activity in Oklahoma, Arkansas, or Louisiana, but occasional salvaged trees harboring the beetle have been found on skidway inspections in southeast Texas.

With the gradual decrease in southern pine beetle populations, there has been a steady rise in black turpentine beetle activity. Localized outbreaks involving scattered trees and small groups of trees became general following selective cutting on private, State, and Federal lands. While outbreaks of this species were not spectacular or widespread, infestations usually involved the most valuable trees in the stand.

Ips beetle populations increased rapidly from August to November in drought-stricken areas in Louisiana, Oklahoma, Arkansas, and Texas. A combination of drought and Ips beetles caused extremely severe pine mortality in several areas of southeast Texas.

SOUTHERN PINE BEETLE

In recent years, outbreaks of the southern pine beetle have occurred on and near the Homochitto National Forest, southwestern Mississippi; the Bankhead National Forest, northern Alabama; and the Talladega National Forest, central and east-central Alabama. Privately owned timberlands throughout central Alabama have also been attacked. Largely by persistent control efforts, all of these outbreaks have been substantially reduced and are being held in check at present.

In all of the areas of infestation, the beetles are confined to single trees and small groups of trees, but in most cases it seems probable that they would spread if left unchecked. On certain private holdings in Alabama, however, small spot infestations continue to appear, then stagnate or die out rather suddenly. Control is not being attempted on these lands.

Since the beginning of the outbreak on and in the vicinity of the Homochitto National Forest in 1952, approximately 80 million board feet of timber have been killed. During the past year, 5,100 trees containing 671,000 board feet were salvaged and 550 trees containing 15,000 board feet were cut and sprayed with benzene hexachloride (BHC) in fuel oil. Periodic operational flights are made by ranger district personnel, and many small timber buyers continuously scout the beetle areas in search of infested trees, which they purchase at a reduced rate.

On private lands adjoining the Homochitto, control has stopped because of the scarcity of beetle-infested trees.

The outbreak on the Bankhead National Forest was discovered in October 1953, and 6-1/2 million board feet of timber have been killed. Keen competition has existed among some 175 small timber buyers in the area, who materially aid in locating beetle-infested trees. During the past year, 1-1/4 million board feet have been salvaged and in recent months most of this timber has been scattered in small groups of 2 or 3 trees. However, a few large spots of as many as 150 trees have been located.

During February, severe winds blew down 3-1/2 million board feet of timber on the Bankhead, but salvage logging has been successfully completed without the anticipated build-up of Ips and black turpentine beetles.

The outbreak on the Talladega National Forest was reported in July 1954 and control measures were put into effect the following year.

To date, 2-1/2 million board feet of timber have been killed. Because of the scarcity of buyers interested in salvage logging and the frequent delay in salvage operations, control has been mostly by cutting and spraying with BHC. Since the first of the year, 24,000 trees containing 600,000 board feet have been cut and sprayed and 4,000 trees containing 268,000 board feet have been salvaged without chemical treatment.

Periodic operational flights and maintenance-type control by a 3-man crew in each of the four ranger districts are considered necessary to keep the beetle in check as long as dry weather prevails.

BLACK TURPENTINE BEETLE

The black turpentine beetle has become increasingly destructive to valuable residual trees following selective logging. Heaviest beetle concentrations occur along river bottoms and on low, normally moist sites during seasons of subnormal rainfall.

Numerous small outbreaks have been controlled on State and private lands. Control has also been necessary on the Sam Houston, Davy Crockett, and Sabine National Forests in Texas, the Kisatchie National Forest in Louisiana, and the DeSoto and Homochitto National Forests in Mississippi.

Control has been carried out by salvage-logging dying timber, spraying infested stumps, and protectively spraying the butts of standing trees that are lightly infested or subject to attack. Some owners have conducted a routine spraying of stumps and damaged trees following selective cutting during droughts.

IPS BARK BEETLES

The increased activity of Ips beetles during dry summer and autumn months appears to be an annual problem. Ips populations built up rapidly in the fall throughout most of the South, but the excessive dying of pines in the drought-stricken areas of east Texas far overshadowed conditions in nearby States.

During an aerial survey over southeast Texas in July, dead and dying pines were found to average two per square mile. District foresters of one of the larger corporations made routine flights in August and found a similar low incidence of mortality. On their September flights, however, the infestation appeared to have exploded.

Dead and dying pines appeared everywhere, and the condition became more critical in October and early November. Some stands had 10 to 15 dead pines per acre. At least 4 million board feet of timber were salvaged during November, but with a loss of approximately \$10 per MBF from degrade caused by sawyer beetles and blue stain.

Most of the dead pines had been inhabited by Ips beetles, but-- especially in the early fall--many pines of all sizes showed no evidence of insect attack. Apparently they died of drought, the severity of which could be gauged from the fact that groups of naturally established seedlings were dead and that there were large cracks in the soil, sometimes an inch in width. By October, however, tremendous beetle populations had developed, and it is likely that insects then killed many trees that might otherwise have survived the drought.

In many dead trees examined in November, one of the engraver beetles, Ips avulsus, was found to be the most prevalent. This species had entered the crowns of all infested trees and in many cases had invaded the bark of the entire trunk. Ips calligraphus and Ips grandicollis had frequently occupied the middle and lower trunk, but after Ips avulsus had attacked the crown.

Counts indicated that populations of Ips avulsus increased at least 1,000 percent per month, until cold November weather slowed down their development.

In the past, but in less severe infestations, Ips beetles have virtually disappeared following cold weather and soaking winter rains. Large populations of beetles are now present in slash left from October cutting operations, however, and may complicate matters in some areas. Further observations will be made during the winter to determine the advisability of control measures next spring. Some thought is being given to the use of trap trees to attract beetles away from the crowns of standing timber. Green trap trees would be felled a few weeks in advance of beetle emergence and, once occupied, would be quickly milled and the tops burned or sprayed with BHC to destroy the broods.

PINE SAWFLIES

In April and early May, the loblolly pine sawfly (Neodiprion taedae linearis) caused varying degrees of defoliation in loblolly pine stands in southern Arkansas and northern Louisiana. Generally, however, defoliation was spotty and confined to low, wet sites. Near

Fordyce, Arkansas, 230 acres of severely defoliated pines were sprayed by aircraft with DDT. Growth loss was reduced and further spread of the insect prevented.

During February 1957, an egg survey will be attempted in the hope of getting a general idea of sawfly distribution and intensity of defoliation to be expected next spring. If conditions warrant, recommendations will be made for controlling the larvae during their initial feeding period.

Scattered and localized defoliation of young plantation pines by the red-headed pine sawfly (Neodiprion lecontei) occurred during the summer and fall months. There were no reports of defoliation severe enough to require chemical control measures.

WHITE GRUBS

In several instances white grubs (Phyllophaga spp.) have destroyed roots and killed seedlings in nurseries and plantations. Large numbers of the adults, or May beetles, were observed flying around lights in April and May throughout the South. It is believed that white grubs are more destructive than is generally recognized. They may become an important factor in the establishment of pine seedlings in the Soil Bank planting program, for much of the land to be planted will probably be already infested.

PINE TIP MOTH

The Nantucket pine tip moth (Rhyacionia frustrana) occurs generally in young loblolly and shortleaf pine plantations throughout the South. The several overlapping broods retard growth severely in many areas, especially on sites not suited to pine.

PALES WEEVIL

During spring and fall, the pales weevil and other reproduction weevils girdled pine seedlings in east Texas, Arkansas, Louisiana, Mississippi, and Alabama. The weevils are generally scattered through the forests of the South and are commonly attracted to burned areas or areas where heavy cutting of pines has been done. Broods develop in the roots of stumps and dying trees and the adults destroy seedlings in the vicinity. It seems likely that weevils may cause some failures in reproduction commonly laid to drought or vegetative competition.

TEXAS LEAF-CUTTING ANT

The Texas leaf-cutting ant, also known as the cut-ant or town ant, has been one of the most important pests of pine seedlings in many parts of east Texas and central Louisiana. Ordinarily, little damage is done to pines when other green plants are available. During the winter months, however, pine needles are about the only green material left and then serious damage to seedlings occurs. Fumigation of ant colonies with methyl bromide has been a necessary preplanting procedure where these insects are plentiful.

HARDWOOD INSECTS

The orange-striped oakworm, yellow-necked oakworm, and variable oakleaf caterpillar, which defoliated thousands of acres of hardwoods in Louisiana, Mississippi, and Texas last year, apparently died out from natural causes.

In early May and June, defoliation by the fall webworm became conspicuous on mulberry, persimmon, pecan, gums, and other hardwoods throughout the South. Many moths were in flight in early July, but later broods became noticeably reduced in most areas.

Considerable damage to young cottonwoods in nurseries and plantations occurred in the vicinity of Stoneville, Mississippi, and in natural growth on Mississippi River sandbars during the fall. A twig borer, probably of the family Olethreutidae, seriously damaged terminals in nearly all trees observed. Height growth was greatly reduced and leaders were killed, so that branching and deformation resulted. Two heavy broods of blotch leaf miners (Gracilariidae) developed during the fall on most cottonwoods. Individual leaves had as much as one-half of their area mined by the insects. Large numbers of overwintering cocoons were found on bark and fallen leaves in December. Moths of a root and stem boring clearwing (Paranthrene sp.) emerged from young cottonwoods during August. New attacks were observed during October and November. Larvae of the cottonwood leaf beetle (Chrysomela scripta) severely defoliated nursery stock and young trees in April, but only light defoliation was evident in the fall.

Larvae of a flatheaded borer (Agrilus sp.), were found on stands of small overcup oak saplings south of Crossett, Arkansas, on the Ouachita River bottom. Ordinarily this insect is considered damaging only in mature overcup oak. Red and white oaks show

numerous attacks by carpenter moths and longhorn beetles. The continuing drought appears to result in greater damage by these insects, for populations build up when tree vigor is low.

The greatest values in southern hardwoods are in the oaks, both in acreage and volume cut. Most insects attacking them cause little mortality, yet account for considerable losses by causing defects that appear in the wood when the trees are cut. In preliminary studies made at the Delta Research Center, Mississippi, an average reduction in value of \$21.90 per thousand board feet was found to occur in overcup, Nuttall, and willow oaks as a result of insect damage. This study emphasizes the seriousness of insect losses in southern hardwoods and the need for protective measures to reduce them.

TREE DISEASES

OAK WILT

Spot infections of oak wilt continued to be active in eastern Tennessee and northern Arkansas. So far, actual wilt damage has been very small in the South. There is some evidence that the oak-wilt fungus cannot withstand the higher temperatures of the Deep South, where the main bottomland stands of oak occur. Because of the importance of oak in southern forests, however, there should be no let-up in the watch for the wilt, and control programs should be carried on in areas where wilt is found.

SWEETGUM BLIGHT

There was little change in the sweetgum blight picture during 1956. Considerable numbers of trees continued to die from Maryland to Texas. The worst loss has occurred on the poorest gum sites. Certain fairly good gum sites suffered some damage, but practically none occurred on the best sites, such as the Mississippi batture. Recent research indicates that the gum blight may be associated with soils having high contents of certain salts and certain other soil factors that limit the amount of available water. In places, drainage ditches have aggravated the trouble, and shortage of rainfall has almost certainly contributed to blight damage. No control is known but it would seem advisable to favor other species on sites where blight loss has been heavy.

NURSERY DISEASES

The 1956 season was notable for many and extensive pine nursery troubles. Heat injury on slash pine was unusually widespread. Heat injury is characterized by the appearance of straw-colored lesions just above the ground line when very succulent tissue is exposed to high temperatures. Damage was most pronounced when loose pine-straw mulch was used.

"Limberneck" was prevalent this year. Succulent terminal growth wilted, drooped, and died. The cause is not fully understood but, in some cases at least, limberneck appeared due to moisture imbalance associated with unusual weather. In other instances root fungi were suspected. Except for nematodes, rust, and brown spot, for which control measures are regularly applied at affected nurseries, most troubles appeared to be due to environmental factors rather than pathogenic organisms.

MISCELLANEOUS DISEASES

Willow scab was found this year in a planting of willow cuttings near Greenville, Mississippi. Blackening of newly developed leaves and twigs is characteristic of scab. This disease, working in conjunction with black canker (caused by a different fungus), has caused extensive killings in New England and eastern Canada. This is the first report of scab in the lower Mississippi Valley. Should black canker also appear, it may be necessary to develop resistant varieties for willow plantings.

Oak leaf blister again appeared over wide areas, but in general did not cause as much defoliation as in some recent years.

Brown-spot, normally important only on longleaf in the grass stage, continued to be prevalent on loblolly pines of all sizes. The importance of loblolly pine infection has not yet been assessed.

Pine needle rust, causing orange pustules on needles, was unusually prevalent this year, but it is not likely that any appreciable damage will result.